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1, 2, and 3 loopfuls of this dilution were used, respectively, to make 3 plates with gelatin.

For each examination we picked out 10 colon and 10 typhoid colonies; the colonies were differentiated by means of the characteristics of the organisms as detailed above, viz: Gas, indol, agglutination.

Résumé of results obtained by planting the mixture.

July 12, first planting.—Development of typhoid and colon colonies on the 14th. On the 18th we counted on plate No. 1 (1 loop of the second dilution) 100 colonies, of which, approximately, 50 were colon and 50 were typhoid, both in the case of flask E and flask H.

Characteristics of the organisms after symbiosis of five days.

B. coli.—The characteristics were preserved.

B. typhosus.—Those which were isolated from the neutral or acid flask have sensibly lost their power of reaction to the agglutinins; even in dilution of 1–10 they were not agglutinated by the serum which had previously been active in the dilution of 1–70000. These have been preserved in our collection under the mark tH1 and tE1.

July 23.—Another planting with similar results:

August 3.—Third planting; results:

The typhoid colonies only appear on the fourth day. They preserve their whitish blue appearance, but remain smaller than in previous plantings. They diminish in number in proportion to the colon colonies (50t. to 70c.). The colon colonies are also smaller than formerly; furthermore, certain ones are small, bluish, and they approach in appearance the colon colonies, with which they might be confounded were one not on his guard. It is always prudent to replant a certain number for study, to be convinced of their colon nature.

The colon and typhoid organisms have the same characteristics as those which we had demonstrated after five days of symbiosis. They were preserved under the marks tH2 and tE2.

The fourth planting (August 22) and the fifth (September 9) show nothing in particular.

The sixth planting (September 29).—Development of colonies on October 4. The number of colonies has considerably diminished. On plate No. 2, were counted—total number, 85; colon, 60; typhoid, 25.

Characteristics of the organisms after eighty-two days of symbiosis.

Colon bacilli.—The colon bacilli which we isolated from flask E. (neutral), no longer give the indol reaction, but still ferment lactose. The colon bacilli from flask H (acid) have preserved their properties (gas, indol, etc.).

Typhoid bacillus.—Presents the same characteristics as after the five days' symbiosis, both in the case of flasks E and H.

October 19, seventh planting.—Colonies can be detected after six days.

From flask E, plate No. 2, there are 60 colonies, among which it is difficult to distinguish between the typhoid and colon colonies.

All the colonies which we replanted from this plate have yielded organisms which produced neither gas nor indol, and which were no longer agglutinated. These organisms were designated as tE6 and cE6.

Flask H, plate No. 2, 200 colonies—150 colon and 50 typhoid.

Characteristics of the two organisms.

Colon bacilli.—Still give the indol reaction and still ferment lactose.

Typhoid bacilli. Preserve their motility, but appear a little more slender. They are no longer agglutinated.

October 26, eighth planting.—The results confirm the former observations:

Flask E.—The number of colonies is reduced to 30 upon plate No. 2. The isolated bacilli are very feeble, and it is only after a series of replantings upon agar that a little vitality can be restored to them. In all cases at this time they give neither indol or gas, and are not agglutinated. These are marked as tE7 and cE7.

Flask H.—The colon bacillus alone remains in this flask, and still gives indol and makes gas, but is very much diminished in number. Plate No. 2 only gives 80 colonies, instead of 150 colonies as at the last planting.

Do colon and typhoid bacilli kept for a long time in laboratories also lose their properties (gas, indol, agglutination) when they are placed under the same conditions as the organisms isolated from stool No. 20?

To satisfy ourselves on this point we employed a colon bacillus from Ghent and a typhoid bacillus from Liège, of which we have been in possession since 1891, and which were procured through the courtesy of Professor Van Ermengem; we followed the same procedure as in experiment I, save that we have employed the neutral solution alone, as that medium only in the former experiment had modified the properties of the bacilli.

Characteristics of the colon and typhoid bacilli before symbiosis.

Bacillus coli.—Energetically ferments lactose gelatin; gives but a feeble indol reaction; is very motile.

Typhoid bacillus.—Is agglutinated by the experimental antityphoid serum in a dilution of 1-80000.

During the first three weeks the colonies of the organisms were very distinct. From this time on the difference became less marked. Further, the typhoid colonies became very rare (2 or 3 typhoid for 100 colon). We then added to the mixture 10 c. c. of a twenty-four-hour-old bouillon culture of the typhoid bacillus Liège, isolated from the flask upon the twenty-first day of the symbiosis. After four months the colon and typhoid bacilli were both living and had preserved their properties—the colon colonies were more numerous than the typhoid.